ADDENDUM I

In this space, I nominate a new miner (*Geositta*) for science, as was done with the Ibera Seedeater (*Sporophila digiacomoorum*) in the first edition (2015), with the Ventania Yellow-Finch (*Sicalis holmbergi*) in the 2017 edition, and the Lenga Cinclodes (*Cinclodes lopezlanusorum*) in 2019

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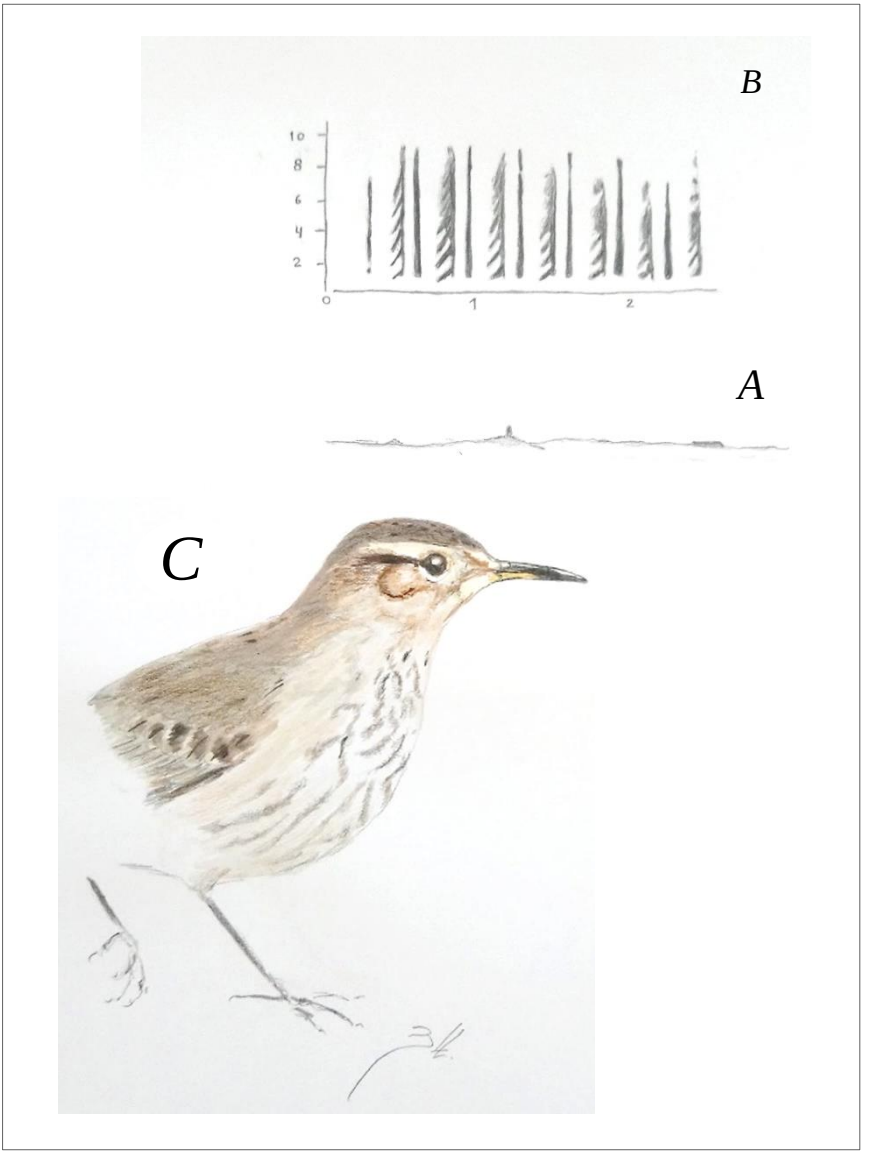

Painting. *A* Conceptualisation of the environment and *B* representation of the vocalisation of the Migrant Miner (*Geositta karinae* sp. nov.). *C* Plumage literally identical to that of the "Gaucho Miner" (*Geositta cunicularia cunicularia*) being a case of a twin/cryptic species. The outline of the Patagonian horizon corresponds to an emblematic site where the species is known to nest, Puerto Deseado (Santa Cruz): taken from "Christmas Day 1833" [diary of C. Darwin] and the painting "Slinging the Monkey" by Conrad Martens (Second Voyage of the HMS Beagle Expedition). The protruding stone (Tower Rock) corresponds to the Torreón Rock or *Cerro Horqueta*, today known as *Piedra Toba*. Amateur watercolour by Bernabé López-Lanús (40 x 30 cm), Saladillo, Buenos Aires province, 2022, prepared for the formal description of the species.

A new species of miner (Furnariidae: *Geositta*) from the Patagonian region, a cryptic taxon immersed in migration in the gaucho pampas of *Geositta c. cunicularia* (Vieillot, 1816).

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ABSTRACT. A new species of miner, *Geositta* (Furnariidae), is described with morphometrics and cryptic plumage that are literally identical to the nominal subspecies of the Common Miner (*Geositta cunicularia cunicularia*). The new taxon is presented as a native of the southern Patagonian steppe, near endemic to Argentina, with occurrence in Chile. It is described how the new species was confounded for more than 200 years with *Geositta cunicularia* since its formal nomination in 1816 by L.J.P. Vieillot based on Azara (1805). It is verified that the typical locality of the nominal taxon (*G. c. cunicularia*) corresponds to the vicinity of the river La Plata and the province of Buenos Aires, where Azara travelled to the river Salado at least once in 1796 and described its reproduction in *"las Pampas de Buenos Ayres"* with details of its vocalization during the reproductive period. It is shown that Vieillot does not base his description of *Geositta cunicularia* on migratory specimens from Patagonia on their winter visits to the La Plata region, as is the case with the Buff-winged Cinclodes (*Cinclodes fuscus*), also described by Vieillot based on Azara. The situation of the southern population being left without a specific epithet is discussed, and the need to nominate it based on its dissimilar reproduction and its radically different vocalization of territorial proclamation. The character of cryptic species or twin species in both taxa is analysed, based on the study of collected specimens (skins). Territorial proclamation song of the new taxon is analysed and compared with the rest of the nine subspecies that make up *G. cunicularia*, without detecting any clinal variation to remotely assimilate it to the vocalization of the new species. Comparative analyses are carried out of the vocal repertoire of the vocalizations of the new taxon with the subspecies *G. c. cunicularia* in particular, and the exclusionary differences are described in detail, presenting no major difficulty in distinguishing them, including aurally. The annual latitudinal migration of the new taxon and its historical distribution range compared to the present is discussed, followed by a description of the resident status of *G. c. cunicularia* in southern Brazil (Santa Catarina and Rio Grande del Sur), Uruguay (Maldonado, Rocha, Salto) and Argentina (Corrientes, Entre Ríos, Buenos Aires), with data on its present and past abundance. The feasibility of the new taxon reaching Uruguay and Brazil in migration, at least historically, is discussed based on the data compiled for those countries.

RESUMEN. *Una nueva especie de caminera (Furnariidae:* Geositta*) de la región Patagónica, taxón críptico inmerso en migración en las pampas gauchas de* Geositta c. cunicularia *(Vieillot, 1816).* Se describe una nueva especie de caminera *Geositta* (Furnariidae) con morfometría y plumaje críptico literalmente idéntico a la subespecie nominal de la Caminera Común (*Geositta cunicularia cunicularia*). Se presenta el nuevo taxón como oriundo del sur de la estepa patagónica, casi endémico de la Argentina, con presencia en Chile. Se describe cómo la nueva especie fue confundida por más de 200 años con *Geositta cunicularia* desde su nominación formal en 1816 por L.J.P. Vieillot sobre la base de Azara (1805). Se comprueba que la *terra typica* del taxón nominal (*G. c. cunicularia*) corresponde a las cercanías del río de La Plata y la provincia de

Buenos Aires, que Azara recorrió hasta el río Salado al menos una vez en 1796, y describe su reproducción en "las Pampas de Buenos Ayres" con detalle de su vocalización en periodo reproductivo. Se comprueba que Vieillot no se basa para describir a *Geositta cunicularia* en ejemplares migratorios desde Patagonia en visita invernal en la región del Plata como sucede con la Remolinera Esteparia (*Cinclodes fuscus*), también descripta por Vieillot sobre la base de Azara. Se analiza la situación de que quede sin epíteto específico la población del sur, y la necesidad de nominarla sobre la base de su reproducción dispar y su vocalización de proclamación territorial radicalmente distinta. Se analiza el carácter de especie críptica o especie gemela entre ambos taxones sobre la base del estudio de especímenes de colección (pieles). Se analiza el canto de proclamación territorial del nuevo taxón y se compara con el resto de las nueve subespecies que conforman a *G. cunicularia,* sin detectarse algún tipo de variación clinal como para asimilarlo, remotamente, a la vocalización de la nueva especie. Se realizan análisis comparativos del repertorio vocal de las vocalizaciones del taxón nuevo con la subespcie *G. c. cunicularia* en particular, y se describen las diferencias excluyentes en detalle, no presentando mayor dificultad para distinguirlas, inclusive auralmente. Se analiza la migración latitudinal anual del nuevo taxón y su alcance en su distribución histórica comparado con la actualidad. Se describe el carácter de especie residente de *G. c. cunicularia* en el sur de Brasil (Santa Catarina y Río Grande del Sur), Uruguay (Maldonado, Rocha, Salto) y Argentina (Corrientes, Entre Ríos, Buenos Aires), con datos sobre su abundancia en el presente y pasado. Se especula si es factible que el nuevo taxón alcance en migración Uruguay y Brasil, al menos históricamente, sobre la base de los datos compilados para esos países.

This paper presents a new bird species to science, included as an addendum in the final part of the fifth edition of the book Guide to the birds of Argentina (López-Lanús 2022).

"Núm. CXLVIII. De la Minera. This is what I call it, alluding to the fact that it digs holes in any ravine, and breeds inside on a bed of dried grass three quarters of the way down, where it makes a small hole for the nest. It does not exist in Paraguay, nor have I seen it except in the vicinity of the River Plate and the pampas of Buenos Ayres. It lives in pairs, and runs lightly along the paths and roads, getting very close. In times of breeding the sexes chase each other, giving a kind of high-pitched screech as if laughing. I have not heard any other song, nor do I know that it soars. It does not fly very much, nor does it perch high up..." (Azara 1805). On this basis, L.J.P. Vieillot nominated the taxon *Geositta cunicularia* (Vieillot, 1816). *Cunicularia* (Latin) miner: that makes mines or tunnels. From *cuniculus*: mine, tunnel, and the suffix *-aria* indicating the agent of what is indicated by the root of the word. In the original *Alauda cunicularia*, based on Azara's Mining Lark [Alondra Minera de Azara] (Mouchard 2019).

So the *terra typica* for this taxon corresponds to the vicinity of the Río de La Plata, and the province of Buenos Aires, which Azara visited as far as the Río Salado at least once in 1796 (Azara 1837). The description of the breeding of the taxon in this region and the detail of its vocalisation during breeding allow us to ensure that the description of the species by L.J.P. Vieillot is based on the sedentary population of the nominal subspecies, and not the migratory winter population. The migratory population is ruled out (as will be seen later), since it breeds in Patagonia in the same summer period. Thus, the nominal taxon *G. c. cunicularia* (Vieillot, 1816) corresponds to the resident population and not to the visiting population. This "caveat" is mentioned so as not to incur in a doubtful or "unresolvable" attribution about the *terra typica* of *G. cunicularia* given the fact that the case could be likened to another Furnariidae also described by Vieillot on the basis of Azara: *Cinclodes fuscus* (Vieillot, 1818). In this species its breeding population is found in Patagonia, with winter migration northwards to southern Brazil, Uruguay and northeastern Argentina. In other words, the data obtained by Azara in the case of *Cinclodes fuscus* effectively correspond to winter migrants. No mention is made of breeding and vocalisation, even though its terra typica is *"Paraguay and the fields of Montevideo and Buenos Ayres"* (Azara 1805). In the case of *Cinclodes fuscus*, the description of the taxon corresponds to a single population irrespective of its origin at the time of validation of its original nomination; quite different from the situation of *Geositta cunicularia*, as there are two sympatric populations in winter, which could have generated a doubt as it would have been necessary to establish which population Félix de Azara was referring to if he had not been so precise in his description. Fortunately, he did.

This digression is crucial if the actual taxonomic situation of *G. cunicularia* is to be perceived, to date with nine subspecies: *G. c.* ***cunicularia*** (Vieillot, 1816) from S-C Brazil to E and S Argentina and S Chile [to date supposedly with migration as far as Br, Uy. and (Py.?)]; *G. c.* ***fissirostris*** (Kittlitz, 1835) from S Atacama to Llanquihué (central Chile); *G. c.* ***frobeni*** (Philippi and Landbeck, 1864) from S Peru (Pacific basin); *G. c.* ***juninensis*** (Taczanowski, 1884) from central Peru; *G. c.* ***deserticolor*** (Hellmayr, 1924) from Arequipa (S. coast of Peru) to N. Chile; *G. c.* ***hellmayri*** (Peters, 1925) from Malleco (E-C of Chile), and W of Arg.; *G. c.* ***titicacae*** (Zimmer, 1935) from S-C of Peru, W of Bolivia, N of Chile and N-W of Arg.; *G. c.* ***georgei*** (Koepcke, 1965) from Ica and W Arequipa (S coast of Peru); and *G. c.* ***contrerasi*** (Nores and Yzurieta, 1980) from the Sierras Grandes in Córdoba (C-W of Arg.). Comparing these subspecies with each other, it is known that the ssp. *cunicularia* has a distinct song very differentiated from *G. c. titicacae* from the northern Andes (see e.g., Pearman and Areta 2020). Similarly, eBird (2022) presents two groups within the same species, the *frobeni* group differentiated from the *cunicularia* group, and gives several examples of their distinctive vocalisations. In the case of Pearman and Areta (*op. cit.*) they add in a taxonomic note: *"Numerous subspecies are recognised, and limits and specific status of many remain contentious (Remsen 2003). Nominate* cunicularia *seems to differ vocally from* titicacae *but probably not from other Argentine taxa, suggesting the existence of at least two separate species (pers. obs., Fjeldså & Krabbe 1990). Further studies across the wide range of this miner are needed to fully understand species limits.* In the main body of that publication they state: *"Voice* cunicularia: *a steady series of complaining couplets we-TUK we-TUK we-TUK… lasting 2–6 secs, while perched or in display flight.* Titicacae*: vocally little known; flight call is a spluttered trill followed by a squeaky stutter chrrrrr kwe-kwe-kwe-kwe-kwe-kwe…"*

So far there is nothing new in what has been said, but it is surprising that nobody has noticed that the population of *G. c. cunicularia*, the nominal subspecies, has two distinct populations within its annual distribution area. One is resident in the pampas region (which includes the provinces of Buenos Aires, Entre Ríos -at least historically-, Corrientes, Uruguay and southern Brazil: Map 1); and another winter visitor, which breeds in Patagonia (Map 1). These populations, which are prone to be studied within the same subspecific taxon, just for that reason (although they do not show morphometric or coloration differentiation: pers. obs.), present a strong distinguishing feature that surpasses whether there is more than one species in the entire territory of *G. cunicularia*. There is a radical distinction within the nominal subspecies (*G. c. cunicularia*), namely its vocalisations (pers. obs.). Thus, judging preliminarily from its vocalisations, the nominal subspecies involves two taxa with species status.

First, it will be necessary to baptise the population that to date has no name and is erroneously immersed within the nominal subspecies of *G. cunicularia*. This population breeds in Patagonia and has a unique distinctive song. This song differs not only from *G. c. cunicularia*, the resident population described by L.J.P. Vieillot on the basis of Azara (1805), but also from all other subspecies of *Geositta cunicularia*. In fact, as will be seen, the nominate subspecies of the *gaucho* region vocalizes with a trill very similar to *G. c. titicacae*, as well as the other subspecies of *G. cunicularia*, in comparison to the bisyllabic vocalisation of the migratory miner of Patagonia.

After analysing the information obtained in this study: 1) Having compared and verified the similarities and differences in the vocalisations of all the subspecies of *G. cunicularia*; 2) At the same time comparing the vocalisations with the remaining species of the genus; 3) Gathering additional information on the nesting and migration areas versus sedentary habits within the taxon *G. c. cunicularia*, a situation that goes beyond any other study to be carried out comparing it with the remaining subspecies; 4) As a strong differentiation of the song of the Patagonian population from the rest of the *G. cunicularia* was found, as it is not part of the population of the nominal subspecies, before being elevated to species status it must have a name; and 5) In short, by paving the way for preliminary knowledge of *Geositta cunicularia* so that the taxonomic studies that have been advocated can be carried out, without the situation of *G. c. cunicularia* having been noticed to date (now known that part of its population represents an unnamed taxon: therefore not elevable to species from a known subspecies but as an unnoticed taxon with cryptic plumage virtually identical to *Geositta c. cunicularia*); I nominate this new species of miner:

Geositta karinae

sp. nov.

Migrant Miner

Caminera Migratoria (Arg.)

Minero Estepario (Chile)

Etymology. The specific name *karinae* is in honour of Karina Biondini, at whose main table in her house in Luján, on 30 July 2022, she became engaged to the author, ring in hand. The following day he discovered the species on the basis of its vocalisation, not in the field but in the same place, by means of audio analysis related to "Xeno-Canto". He announced the fact to his magical beloved at the same time as his astonishment: *"It's not every day one can be so lucky, I wanted you to be the first to know"*. There are sensations that are simply impossible to describe, that are shared forever; a hug is enough, and the unique encouragement in her gaze... Coinciding with the same Sun, Moon, Kosmos, Eternity... Like the birds and Man.

The vernacular names in Spanish (for Argentina) and in English refer to the extensive migratory range of the species; in contrast to the resident species status of the "Gaucho Miner" (*G. c. cunicularia*), the common name given here for this nominal subspecies whose *"terra typica"* are the *pampas* of Buenos Aires, with a non-migratory distribution as far as the Argentine Mesopotamia, in Uruguay, and as far as the state of Santa Catarina, in Brazil (Map 1). In the case of the common name suggested for Chile, it is preferable to use another epithet, as another migratory species, *Geositta antarctica* (Short-billed Miner), is also native to Patagonia and endemic to this biome. That of “Minero Estepario” [from de steppe] refers to its belonging to southern Patagonia in Chile geographically (as is also the case for *Geositta antarctica*, but in this case under the name in Chile of "Minero Austral").

Holotype. MACN1784a, Río Gallegos, Santa Cruz, Argentina, skin, ♂, collected by E. Budin in January 1928.

Holotype measurements. Length of bill (culmen exposed) 13.5 mm; length of bill between nares and tip 11.5 mm; tarsus 24.5 mm; wing (chordate) 91 mm; tail 49 mm.

Description of the holotype. This is a (cryptic) twin species to *Geositta c. cunicularia*, the nominal subspecies of *G. cunicularia*. The morphometry and apparent colouration of the bare parts and/or plumage do not differ from the plumage stages of *G. c. cunicularia*, therefore the description of the holotype colouration is not presented as it is redundant (Table 1, Painting 1).

Designation of paratypes. Skins. All from Río Gallegos, Santa Cruz, Argentina. MACN1787a, ♀, collected by E. Budin in January 1928. MACN1784aBis, ♂, collected by E. Budin in January 1928. MACN8914, ♀, collected by J. Mogensen on 14/NOV/1914. MACN1697a, ♂, collected by J. Mogensen on 3/DEC/1914 (Table 1).

Variation in the type series. No variation. Morphometric data are within the expected range for minimal individual variation. The coloration of the plumage does not show any differences within the type series.

Diagnosis: Morphology. Furnariidae assignable to the genus *Geositta* by the combination of bill shape, bird size and plumage colouration pattern. It is a twin/cryptic taxon with *Geositta c. cunicularia*, indistinguishable by morphometry and colouration from the latter (Painting 1). No data on plumage variation are presented, as these conform to those of its twin taxon: *Geositta c. cunicularia* (the author, pers. obs.). The museum skins studied (115 specimens of *G. cunicularia*, of which 61 specimens corresponding to *G. c. cunicularia* specimens collected during the open breeding season: December, January and February -in order to avoid the overlapping of migrating individuals-) were studied morphometrically and colour-wise, showed no differences between them. No differences were found in the shape of the remiges, nor in the length of the remiges (primary versus secondary: in view of the Kipp's index ratio), nor in the length of the narrower distal end of the external vane of the primaries. No spectrophotometric analyses were performed.

Diagnosis: Vocalisations. The territorial procla-

mation vocalisations of *Geositta karinae* show a dissimilar and/or contrasting typology with those of *G. c. cunicularia* and all the subspecies of *G. cunicularia*. This differentiation is striking and eloquent, not as subtle as the "virtually identical" typology among the subspecies of *G. cunicularia* (which is the subject of another study, but may well lead to changes in the taxonomy of the *cunicularia* group as discussed at the beginning of this paper). Secondary vocalisations (e.g., contact calls) also show differentiation between *G. karinae* and *G. c. cunicularia*, and the rest of the subspecies of *G. cunicularia*.

Geositta karinae and *C. c. cunicularia* (and/or the rest of the subspecies of *G. cunicularia*) do not have a similar homologous repertoire of vocalisations between the two species. The description of the territorial proclamation song in the two populations was made on the basis of recordings deposited in three ornithological sound banks (Xeno-Canto, MLNS/CLO and Wiki-aves). Likewise for contact calls.

Standard methodology is followed for comparative analyses of vocalisations, which makes it possible to resolve the taxonomic status of other previously recognised species, as is the case with other Passeriformes. The audiospectrograms are copies of those shown in the respective sound banks mentioned above. For the songs of territorial proclamation only certain recordings made strictly during the summer period (breeding) were used, from the second half of October and during the whole of November, December, January and February. This modality is applied to correctly interpret the distribution of the two taxa in order to avoid doubts in the case of *G. karinae* vocalising in migration within the territory of *G. c. cunicularia*. The sex associated with each auditory record could not be determined because the species has no sexual dimorphism. In all cases, the records were interpreted as coming from adults due to the breeding period in which they were made and the forcefulness in the emission of the vocalisations and/or similarity with other recordings.

TERRITORIAL PROCLAMATION SONG: Eight acoustic specimens of *G. karinae* and dozens of sequences of its territorial proclamation song, that it emits in both nuptial flight and when perched, were analysed from two sites: Corpen Aike (Piedra Buena), Santa Cruz, Argentina, on 19 October 2005 (Table 1 and 3, Map 1), and at Pali Aike and surroundings (San Gregorio), Magallanes, Chile, in October, November or December 2004, 2011 and 2018 (Table 1 and 3, Map 1). Both sites are within the known summer breeding range of *G. karinae*, 180 km north and 65 km south of Río Gallegos, respectively, the type locality (*terra typica*) where the type series was obtained (Map 1, Table 1). As a counterpart, 27 acoustic specimens of *G. c. cunicularia* were analysed and several dozens of sequences of its territorial proclamation song (emitted both in nuptial flight and perched), corresponding to 10 sites in its distribution area as a resident species, all in the summer breeding season in Brazil (Santa Catarina and Rio Grande do Sul), Uruguay (Salto) and Argentina (Buenos Aires) in both the coastal and mediterranean regions (Table 1 and 3, Map 1); plus 7 localities with a description of the song in Uruguay and in Entre Ríos and Buenos Aires (partly historical): Table 3, Map 1.

The territorial proclamation vocalisation is diagnostic aurally. *G. karinae* emits long, stable sucessions with uneven bisyllabic notes *chi-cu, chi-cu, chi-cu, chi-cu, chi-cu, chi-cu* emitted monochordally, from 5-7 times in isolation (Fig. 1a,b) to successions of tens of notes at a time (up to c. 30-35 times), with repeated intervals of equal duration as the phrases, sometimes longer, sometimes half as long. Audiospectrally, it presents 8 notes per second (Fig. 1a and 1b), starting with a short note of 0.028' duration in the shape of a V or inverted U (between 3 and 4.8 kHz), followed by a noticeably longer note of 0.122' duration (5-6 times longer), with a uniformly ascending frequency distribution, bar-shaped, slightly modulated, and a slight drop at the end (between 2.8 and 4.7 kHz). As a whole, when adding the harmonics in the frequency distribution with the highest amplitude of both notes, it has a range of 1 to 5 kHz.

On the other hand, *G. c. cunicularia*, as well as the rest of the subspecies of *G. cunicularia*, emits an equally aurally diagnostic vocalisation, characterised by a very high-pitched rapid trill of monosyllabic monochordal low notes: *í,í,í,í,í, í,í,rr,kí,kí,kí,kí,kí,kí,kí,kí,kí,kí,kí,kí...* more spaced at the end, often in an almost superimposed duet. It can be likened to the structure of a rapid high-pitched laugh. Audiospectrally it initially presents between 13 and 18 notes per second (Fig. 2a,b,c), constituting a succession of notes of the same type of 0.037' duration in the form of a V or inverted U (between 2.8-3.6 and 4.4 to 6 kHz). This description and the values also apply

to the rest of the subspecies of *G. cunicularia* (Figs. 4-7) obtained for this study.

It will be the aim of another study to analyse the details of the differentiation between the vocalisations of the subspecific taxa of *G. cunicularia*, but as far as *G. karinae* is concerned, its radical differentiation as a unique and distinct taxon is demonstrated, not existing between the populations of *G. cunicularia* in the north of its distribution in Brazil (Santa Catarina) and those in the south in Argentina (south of Buenos Aires), nor between the dune population on the maritime coast (in Brazil and Uruguay) and the mediterranean areas on the Uruguay river (Salto in Uruguay and Uruguaiana in Brazil: Map 1, Table 3), with evident clinality; not even remotely approaching the vocalisation pattern of *G. karinae* that is extremely divergent, only present in its breeding area in Patagonia (Map 1, Table 2 and 3).

CALLS: This study is limited to demonstrating the species status of *G. karinae* with a minimum amount of data that is convincing in terms of bioacoustics. The calls obtained are insufficient to perform a minimal but eloquent analysis as was done with the territorial proclamation vocalisations. However, in all the recordings studied (Tables 2 and 3) a pattern emerges: *G. karinae* has complex contact calls that are not be present in *G. cunicularia*. These notes have a similar pattern or type (even aurally) to those described as the second note in its territorial proclamation song: "rising frequency distribution with a slight fall at the end" (Fig.1c and 1d). These complex contact calls have not been recorded in *G. cunicularia*. Another type of call is the alarm call, also not analysed due to the lack of a large sample for making even a preliminary comparison This call, consisting of a *beep!* (Table 3) is very similar to that also emitted as an alarm by the Buff-winged Cinclodes (*Cinclodes fuscus*). That of *G. c. cunicularia* is not as sharp, being of longer duration (BLL pers. obs.: not analysed). In parallel, *G. cunicularia* has "complex" contact calls, such as the one shown in Figure 3, but this is no more than an isolated note of the final notes of the trill succession of the territorial proclamation song of *G. cunicularia* in any of its subspecies.

Breeding: geographic distribution. Map 1 divides the previously known distribution of *G. c. cunicularia* between this nominal subspecies and *G. karinae*. The classical literature was used to reconstruct the historical population distribution of both taxa (over a hundred years) in an attempt to cite unambiguously detailed cases. In Argentina, *G. c. cunicularia* has a resident population overlapping with the winter visit (sympatric) of *G. karinae* from Patagonia; but *G. karinae* would not reach Uruguay and Brazil, according to the observation data available in eBird (2022), Wikiaves (2022) and the information collected in Uruguay. In Uruguay, the winter population of *G. c. cunicularia* is the same as in the summer period, at least in Maldonado and Rocha (A. Azpiroz, C. Calimares and M. Abreu, pers. comm.) and in Salto (A. Azpiroz pers. comm.). While this situation is not exclusive (as some specimens of *G. karinae* may cross the Uruguay river), the perception that there is no winter visitor population in Uruguay should not be underestimated 'as unquantified', as Barrows (1883) gives much information for Concepción, northeast Entre Ríos, a site bordering Uruguay: *"Hardly more than a winter visitor at Concepción, though a pair seen October 26 appeared to have eggs or young. In winter, however, it is very abundant"*. The "perception" of W. B. Barrows at least indicates that *G. karinae* was an abundant visitor in 1883, and may well have reached at least Uruguay. At present, Entre Ríos does not have any populations of Common or Migrant Miners in that area (J.L. Grotteria *in lit.*): at least one wintering record of a specimen is known from Victoria (E.R.) on the islands opposite the city of Rosario (A. Galimberti *in lit.*).

In the case of Corrientes, of the 36 specimens collected by W. Partridge and deposited in the MACN (Buenos Aires), mostly from the estancia Rincón del Ombú, Mercedes, one female captured on 6 October 1961 had an egg about to be laid and was previously seen *"working at the nest"* (MACN-44291). The status of the species is therefore that of a nester. The record of Azpiroz *et al.* (2013) in Campo Ávalos (Ea. San Pedro), Monte Caseros, Corrientes, on 18 August 2010, with an individual performing the song of *G. c. cunicularia* in aerial display (BLL pers. obs.: Table 3) on a winter date (technically) -but at that latitude typical of a pre-breeding specimen-, allows us to consider the species in Corrientes as resident up to the present. This coincides with current records of *G. c. cunicularia* in Uruguaiana in Brazil (very close to Campo Ávalos) and Salto in Uruguay (Table 4). To date, there are no data of *G. karinae* reaching so far north, at least in the littoral region of Argentina.

The wintering data from southern Santa Fe in

the Melincué area (surroundings of Miguel Torres, 9 July 2021) provided by M.J.E. Almada (*in lit.*) are revealing. Considered there to be a winter species, he comments: *"when photographed better using playback, the bird did not react to a recording of* G. cunicularia *from the altiplano group provided by eBird* (2021), *but instead it approached abruptly when hearing a recording of the Patagonian group of* G. cunicularia [now *G. karinae*] *to the point of respondering with the same bisyllabic vocalisation (in mid-winter)".* The same thing happened (comment in the margin) with a photographed specimen of *G. c.* (*contrerasi*?) in San Luis, at El Morro, at 992 m, on 22 July 2022, this time the specimen did not react to the first recording emitted (of *G. karinae*) but responded abruptly with the same song to the recording of *G. cunicularia* from the altiplano (M.J.E. Almada *in lit.*). The latter situation would suggest that *G. c. contrerasi* moves to lower altitudes in winter, and that it inhabits not only the Sierras Grandes de Córdoba but also the Sierras de San Luis, as is the case with other ornithological endemics in that region.

The province of Buenos Aires receives the main population of *G. karinae*, judging by the winter records to date. Its presence in association with other Patagonian winter migrants, such as the Austral Negrito (*Lessonia rufa*), the Chocolate-vented Tyrant (*Neoxolmis rufiventris*), to name two Passeriformes, or the Least Seedsnipe (*Thinocorus rumicivorus*) and Tawny-throated Dotterel (*Oreopholus ruficollis*), confirms this situation, being found in small groups of 10-15 individuals in stubble fields, fields with bare patches or sown fields (S. J. Torres, M. A. Roda, C. Danti pers. comm, BLL pers. obs.). However, *G. c. cunicularia* seems to be "declining" in its formerly common population, at least in the centre of the province. Common names such as "'dwarf hornero'/dwarf bird" [Pájaro Petiso] given by F. Roda in Saladillo (M.A. Roda pers. comm.) around 1950/1960 indicate the regular presence of the species, even breeding in that locality: *"they nest on the edges of earth left by road machines on the sides of country roads"* (F. Roda pers. comm. to M.A. Roda). The record of a nest with chicks on 9 October 1970 in Saladillo (T. Narosky and D. Yzurieta in Narosky *et al.* 1983: the publication says Roque Pérez but the record was on the Saladillo side [T. Narosky pers. comm. to M.A. Roda]) is the last known record in that area. Azara (1805) or Sclater and Hudson (1888) comment on the resident and breeding character of *G. c. cunicularia* in the pampas of Buenos Aires, associated with the Plains Vizcacha (*Lagostomus maximus*) according to W. H. Hudson - to give an example that describes it; today both species have almost disappeared from the humid pampas. The coastal summer records in the dunes of the Atlantic coast of Buenos Aires are still valid (see Table 4: Faro Querandí: S. J. Torres *in lit.*), the use of this habitat being identical to that of Brazil and Uruguay. In fact, the record from Villarino, S-W of Bahía Blanca (Table 3) with one recorded specimen, is not so far from the coast. Other current records with breeding data are found south of the Ventania system, in Puán and Tornquist (e.g. Cerro Cortapié) nesting on the roadside (A. Morici *in lit.*, R. Fernández Chaves *in lit.*: Table 4). These would be the southernmost records of *G. c. cunicularia*, close to the Monte phytogeographic province. In Ea. Marahué, Pedro Luro, south of Bahía Blanca, the records are winter records, never for specimens resident in summer (R. Scoffield *in lit.*).

G. karinae is an abundant summer species on Península Valdés (Chubut) in northern Patagonia (M., M. and S. Uranga, L. Segura, S.J. Torres *in lit.*), but despite its presence in summer it is not entirely clear whether it breeds so far north (see below: observations). On the other hand, nesting records are common in Santa Cruz and Tierra del Fuego (Narosky *et al.* 1983).

OBSERVATIONS

This paper does not intend to cover the complete natural history of two taxa, the Migrant Miner (*G. karinae*) and the Common Miner = "Gaucho Miner" as a subspecific vernacular name (*G. c. cunicularia*); but to show that the Patagonian migratory population, breeding in the south, is not part of *G. cunicularia*. Thus, *G. karinae* can be distinguished from the nominal subspecies on the basis of the song of territorial proclamation, well differentiated and with no cline between the vocalisations of both populations (the northern one being resident), so far going unnoticed (after 206 years); an understandable situation as it is a new case of a twin or cryptic species, indistinguishable in plumage and morphometry from the nominal subspecies of *G. cunicularia*. The author is aware that the data provided could be considerably richer and presented as required by current scientific publications; however, this publication does not lack the minimum data required to demonstrate the existence of a new species, as has already

been done in previous editions (2015, 2017 and 2019) in this same editorial line.

The same is true for the Lenga Cinclodes (*Cinclodes lopezlanusorum*) and the Buff-winged Cinclodes (*Cinclodes fuscus*); the Warbling Doradito (*Pseudocolopteryx flaviventris*) and the Ticking Doradito (*Pseudocolopteryx citreola*); or the White-crested Tyrranulet (*Serpophaga subcristata*) and the Straneck's Tyrannulet (*Serpophaga griseicapilla*), to give just a few examples in Argentina; both species are a challenge to identify by plumage when their populations are sympatric in winter. However, they apparently respond positively to the use of playback in winter, which is not the case for the Cinclodes and Doraditos mentioned above.

Accumulation of data yet to be known will allow a better analysis of the biology of both taxa, especially in terms of their conservation status. For example, it is necessary to elucidate whether the habitual presence of *G. karinae* on Península Valdés corresponds to a population passing southwards, or whether it actually breeds in northeastern Patagonia as might be expected. The doubt is generated by the following example: from 8 to 11 December 2022 they did not respond to playback but only with alarm vocalisations (S., M. and M. Uranga *in lit.*). In this case the behaviour of c.10 individuals subjected to playback with territorial proclamation vocalisations was not that of breeding; the same happens with the Buff-winged Cinclodes (*Cinclodes fuscus*) in northern Patagonia, when it is passing through to southern Patagonia where it breeds.

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Table 1: **Specimens examined at the Museo Argentino de Ciencias Naturales Bernardino Rivadavia (MACN)**. The number of *G. cunicularia* specimens available at the museum in mid-2022 (=115 specimens) is significantly higher than those examined in detail (=75 specimens of *G. c. cunicularia*). The nominal subspecies (*G. c. cunicularia*) was analysed if the specimens were caught in the open breeding period (December, January or February), totalling 54 breeding inds. (36 of them from Corrientes province), and 21 non-breeding individuals. Other subspecies of *Geositta cunicularia* present in the museum were only examined superficially in order to detect if they could be reliably differentiated from the nominal subspecies: they are *G. c. hellmayri* (14 inds.), *G. c. titicacae* (9 inds.), *G. c. contrerasi* (3 winter inds.) and *G. c. fissirostris* (14 inds.).

Taxon	Collection numbers
G. karinae **(4♂ and 3♀)**	**MACN-1784a, 1787a,1784aBis,8914,1697a (=20301),52256,8339.**
G. cunicularia cunicularia	**MACN-44311,44298,52e,48712,48713,913a (+ 62 specimens from the breeding period)**

Table 2: **Acoustic specimens examined**. For Peru several examples without determination of the subspecies. No examples of specific vocalisations were found for the supespecies *G. c. frobeni* from S Peru (Pacific basin).

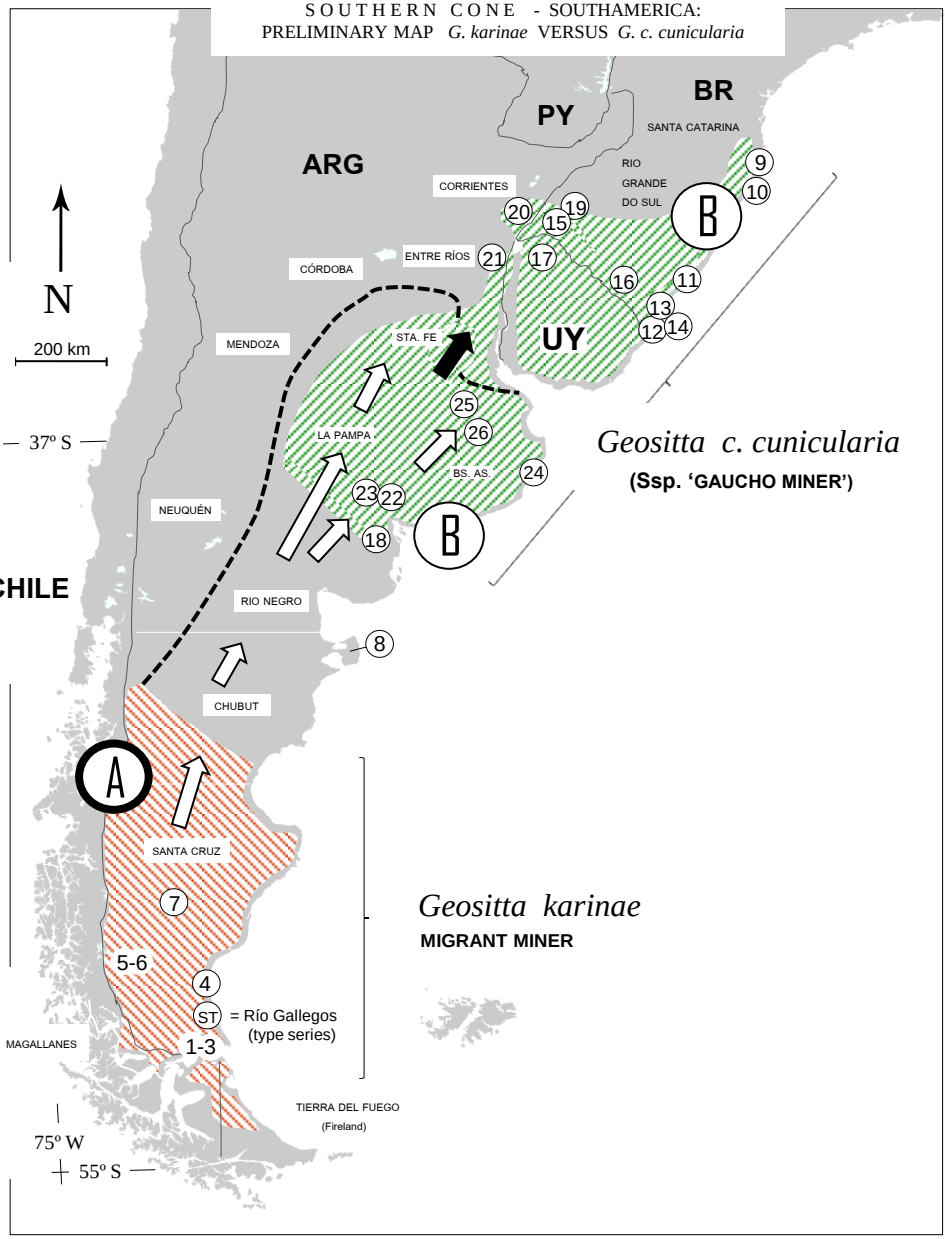
Taxon	Collection numbers
G. karinae	**XC449948, XC449947, XC449946, XC449945, XC90637, XC90634, XC48907, XC15996, XC415905 (alarm, not analysed due to lack of examples), XC15995, ML228734541, ML70787291.**
G. cunicularia cunicularia	**XC686936, XC686891, XC686878, XC474401, XC60007, XC60006, XC60005, XC88864, XC84294, ML499842841, ML486653851, ML462664011, WA709825, WA1323775, WA1128481 (alarm, not analysed), WA319976 (alarm, idem), WA5033858, WA4613900, WA4613658, WA4427954, WA3988409, WA3129339, WA2719982, WA2465751, WA1825243,**
G. cunicularia contrerasi	**ML414324701.**
G. cunicularia hellmayri	**XC102714 (confirm ssp.), ML86556.**
G. cunicularia fissirostris	**XC367143, XC367142, XC529898, XC529897, XC60008, XC33857, ML470064951, ML119537731.**
G. cunicularia titicacae	**XC457404, XC32201, XC16151, XC95262, XC47630.**
G. cunicularia juninensis	**XC348612.**
G. cunicularia deserticolor	**ML394757151 (alarm, not analysed due to lack of examples), ML33931.**
G. cunicularia **(ssp. from Peru undetermined)**	**XC223368, XC223367, XC223370, XC223369, XC23055, ML307499 (alarm, not analysed due to lack of examples).**

Table 3: **Locations and dates of acoustic records of *Geositta karinae* and *G. c. cunicularia***. The correlative number is presented for location purposes on Map 1.

Taxon	No.	Site, date, acoustic specimen, sound recordist
		TERRITORIAL PROCLAMATION SONG
G. karinae	1	Pali Aike, San Gregorio, Magallanes, XII Región, Chile. 14 & 22 Nov 2004 (XC60005/6/7: A. Jaramillo)
	2	Entrance road to Pali Aike, '' . 27 Oct 2011 (XC90634/37: natural & rpb: A. Spencer)
	3	Road to Pali Aike, '' . 12 Dec 2018 (XC449946/47/48: P. Boesman)
	4	Corpen Aike (Piedra Buena), Santa Cruz, Argentina. 19 Oct 2005 (ML228734541: S. Imberti)
		CALL (contact)
	5	Laguna Los Escarchados, Santa Cruz, Argentina. 5 Feb 1984 (XC15995,ML240662: N. Krabbe)
	6	'' . 27 Jan 2008 (XC48907: B. López-Lanús)
		CALL (contact)
	7	Laguna LA4, Meseta Buenos Aires, Santa Cruz, Argentina. 22 Feb 2018 (XC415905: alarm: B. Wilcox)
	8	Península Valdés, Chubut, Argentina. 9 Dec 2022 (alarm: S. Uranga)
G. c. cunicularia		**TERRITORIAL PROCLAMATION SONG**
	9	Praia de Ibiraquera, Imbituba, Santa Catarina, Brasil. 8 Jan 2008 (XC474401: D. Buzzetti)
	10	Camacho, Santa Catarina, Brasil. 16 Jun 2022 (ML462664011: Leandro Corrêa)
	11	Mostardas, Rio Grande do Sul, Brasil. 9 & 10 Nov 2021 (XC686891, XC686878: J. Araujo De Oliveira)
	12	Rio Grande, Rio Grande do Sul, Brasil. 11 Nov 2021 (XC686936: J. Araujo De Oliveira)
	13	Banhado do Maçarico, Rio Grande, RG, Brasil. 23/Jul & 6/Oct 2011 (XC88864,XC84294: R. Antunes Dias)
	14	Surroundings of Rio Grande, RG do Sul, Brasil. 14 Sep 2022 (ML486653851: L. Weymar Junior)
	15	Uruguaiana, Rio Grande do Sul, Brasil. 4 Aug 2012 (WA709825: G. Bellagamba)
	16	Candiota, Rio Grande do Sul, Brasil. Arg. 23 Nov 2012 (ML499842841: M. Cruz)
	17	Arerunguá, Salto, Uruguay, 15 Oct 2012, two individuals (Adrián Azpiroz).
	18	Salinas Las Barrancas (Chicas), Villarino, Buenos Aires, Arg. 15 Nov 2019 (ML499842841: P. A. Pla)

Table 4: **Sites and dates of key records for *G. cunicularia cunicularia*** (photographic / auditory / observations: contemporary and historical), which are essential for understanding the distribution of the nominate subspecies of *G. cunicularia*. The correlative number from the other tables is presented to show its location on Map 1.

G. c. cunicularia	**Other contemporary or historical records (on a photographic / aural / observation basis)**
19	Município de Uruguaiana, Rio Grande do Sul, Brasil. 19 Feb 2013 (WA891380: photo, Gina Bellagamba)
20	Campo Ávalos (Ea. San Pedro), Monte Caseros, Corrientes, Argentina. 18 Aug 2010 (Azpiroz *et al*. 2013, BLL pers. obs.: description of the song and display).
21	Concepción, Entre Ríos, Argentina. 26 Oct 1880 (Barrows 1883: breeding, eggs or chicks).
22	Berraondo, Tornquist, Buenos Aires, Argentina. 22 Dec 2010 (A. Morici *in lit.*: breeding, description of vocalisation, resident).
23	Cerro Cortapié, López Lecube (Puán), Buenos Aires, Argentina. 12 Dec 2018 (A. Morici *in lit.*: breeding, description of vocalisation, resident). Idem R. Fernández Cháves (*in lit.*).
24	Lighthouse/Reserve Querandí (Villa Gesell), Bs. As., Arg. 23 Jan 2022 (EcoR492825: photo, S.J. Torres)
25	Historic: Pampas of Buenos Ayres (up to the Salado River), Arg. c.1796 (Azara 1805: reproducción, descripción de vocalización, residente).
26	Historic: Buenos Aires Pampas (to Tandil/Azul), Arg. (Sclater & Hudson 1888: breeding, description of vocalisation, resident).



Map 1: A**) Distribution of *Geositta karinae*** (the Migrant Miner) = burgundy patch, **versus B) *Geositta cunicularia cunicularia*** (the ' Gaucho Miner': subspecies belonging to the *G. cunicularia* complex known in Argentina as the Common or Striated Miner) = green patch. The white arrows roughly indicate the wintering range of *G. karinae*. The black arrow indicates the extent of its movement more than 100 years ago to at least northeastern Entre Ríos. The black line indicates the limit of the winter range of *G. karinae*. The numeration per site corresponds to the key records selected for understanding the distribution of both taxa. There are no reliable records of it entering Uruguay and Brazil (studies needed). Author's map, preliminary sketch after dividing the migratory Patagonian population (*G. karinae*) from the resident population (*G. c. cunicularia*) inhabiting the gaucho region.

G. karinae

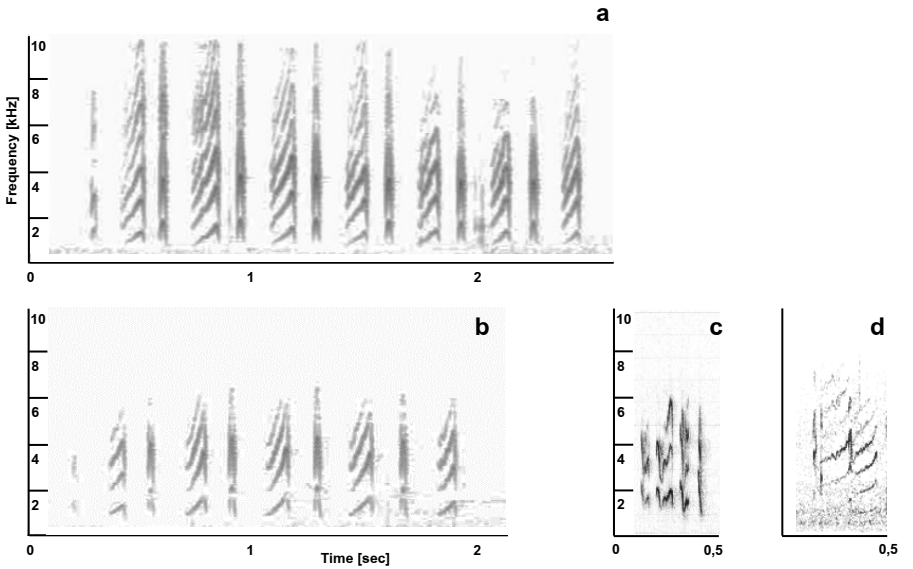


Figure 1. Representative audiospectrograms of the **TERRITORIAL PROCLAMATION SONG** of ***Geositta karinae***: a) Road to Pali Aike, San Gregorio, Magallanes, XII Region, Chile. 27 Oct 2011 [Andrew Spencer: ML70787311]. b) Piedra Buena, Corpen Aike, Santa Cruz, Argentina. 19 Oct 2005 [Santiago Imberti: ML228734541]. **CONTACT CALL**: c) Laguna de los Escarchados, Santa Cruz, Argentina. 27 Jan 2008 [B. López-Lanús: XC48907]; d) Idem site. 5 Feb 1984 [Niels Krabbe: XC15995].

G. cunicularia cunicularia

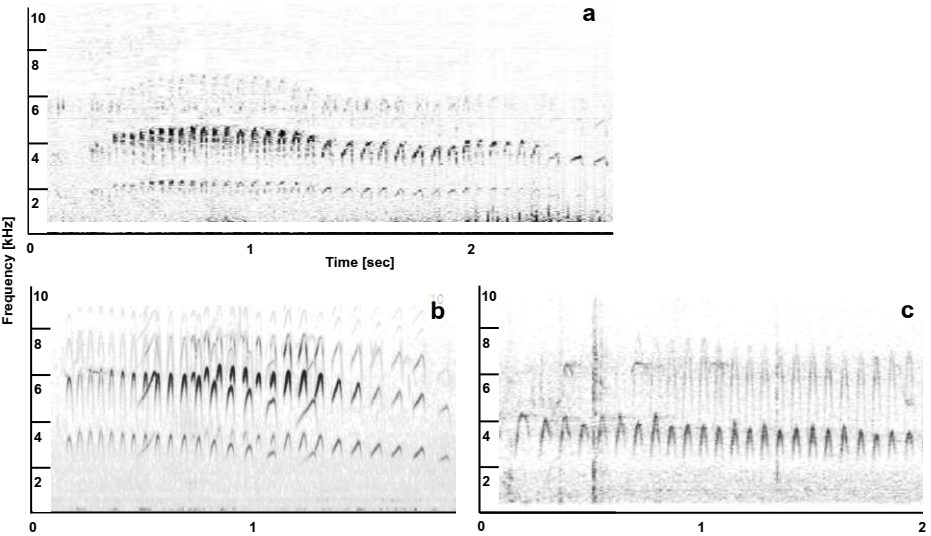


Figure 2. Representative audiospectrograms of the TERRITORIAL PROCLAMATION SONG of ***Geositta c. cunicularia*** (nominal subspecies): **a)** Banhado do Maçarico area, Rio Grande, Rio Grande do Sul, Brazil. 6 Oct 2011 [Rafael Antunes Dias: XC88864]. **b)** Arerunguá, Salto, Uruguay, 15 Oct 2012, two individuals [Adrián Azpiroz:]. **c)** Salinas Las Barrancas (Chicas), Villarino, Buenos Aires, Argentina. 15 Nov 2019 [Pablo Alejandro Pla: ML499842841].

G. cunicularia contrerasi

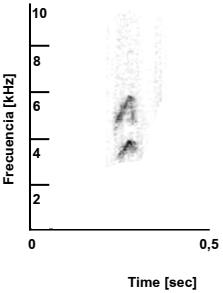


Figure 3. CALL of ***Geositta c. contrerasi***: Cuchilla Nevada, Cruz del Eje, Córdoba, Argentina. 23 Jan 2022 [Alasco López: ML4143 24701].

G. cunicularia hellmayri

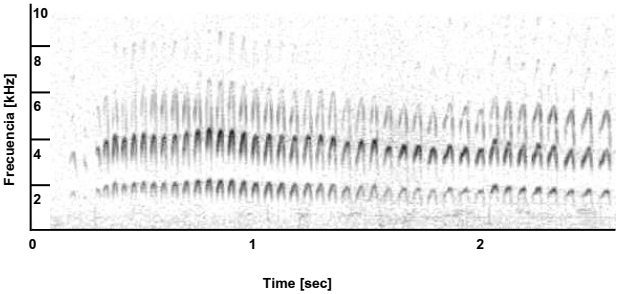


Figure 4. Representative audiospectrogram of the TERRITORIAL PROCLAMATION SONG of ***Geositta c. hellmayri***: Laguna Llancanelo, Mendoza, Argentina. 21 Nov 1991 [Davis Finch: ML86556].

G. cunicularia fissirostris

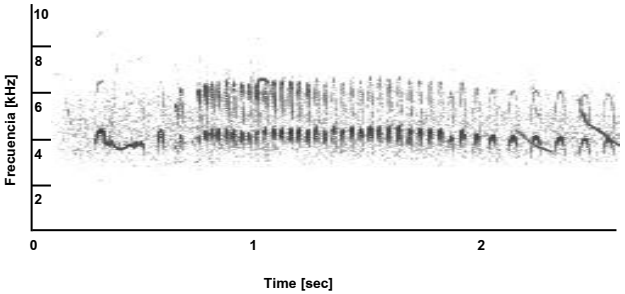
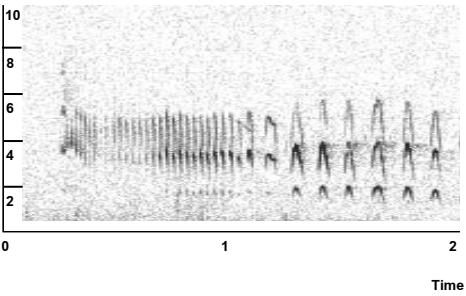
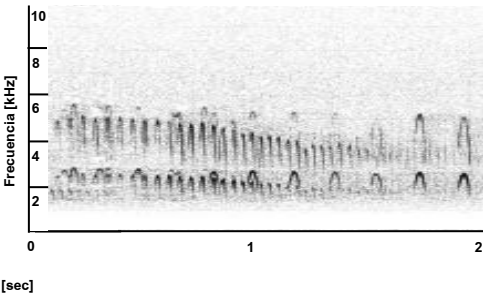


Figure 5. Representative audiospectrogram of the TERRITORIAL PROCLAMATION SONG of ***Geositta c. fissirostris***: Punta de Tralca, V Region, Valparaiso, Chile. 15 Oct 2003 [Álvaro Jaramillo: XC60008].

G. cunicularia titicacae



G. cunicularia juninensis



Time [sec]

Figure 6. Representative audiospectrogram of the TERRITORIAL PROCLAMATION SONG of ***Geositta c. titicacae***: Laguna Rontuyoc, 7.6 km north of Abra Pampa, Jujuy, Argentina. 2 Feb 2019 [Niels Krabbe: XC457404].

Figure 7. Representative audiospectrogram of the TERRITORIAL PROCLAMATION SONG of ***Geositta c. juninensis***: Pomacocha Lake, Junín, Peru. 22 Mar 2015 [Peter Boesman: XC223369].

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